TEACHME APP: DIGITIZED HANDOUTS FOR FLEXIBLE LEARNING IN ENGLISH AMIDST PANDEMIC

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Abstract

In 21st-century education, technology has become a trend. As technology is advantageous, research databases have recorded an increasing number of studies concentrating on its application in the teaching and learning process. Relatively, the present study aimed to determine the effects of digitized handouts using the TeachMe Mobile Application on the Magdalena INHS Senior High School students' performance and attitude towards learning English.

The research involved one hundred fifty (150) students from Senior High School of Magdalena Integrated National High School, located at Brgy. Malaking Ambling, Magdalena, Laguna. Before the researcher utilized the digitized module, the respondents used printed modules during the first quarter, then gathered the respondents' first quarterly grade in English then used the digitized module in the second quarter and gathered the students' grades again. A researcher-made questionnaire was used as the main instrument to obtain the necessary data.

The data gathered revealed that the TeachMe App's adaptability, accessibility, compatibility, ease of mobility, and usability were high. Adaptability has a mean score of 3.80, accessibility has 3.80, compatibility attained a mean score of 3.76, ease of mobility has a mean score of 3.79, and usability attained a mean score of 3.78. In addition, out of 150 respondents, 121 respondents, or roughly 81% of the population responded that they spent less than 500 pesos a month on the application. Another 12% claim, or about 18 respondents, state that they spend around 501 to 1000 pesos with the app. On the other hand, around 3% of the population claim that they spend more than 3000 pesos, which is about five respondents which means that the TeachMe App is also cost-effective.

On the senior high school students' level of attitude in terms of Motivation attained a mean score of 3.80 and a standard deviation of 0.72, and was High among the students. At the same time, the senior high school students' level of attitude in terms of Study Habits attained a mean score of 3.83 and a standard deviation of 0.76, and was High among the students.

Moreover, on the senior high school students' performance in English during the first semester has an average mean of 86.32 and a standard deviation of 3.48, which is remarked as Very Satisfactory, while the second semester has an average mean of 87.66 and a standard deviation of 3.71 which is remarked as Very Satisfactory. In totality, there is a significant difference in the mean scores of the students in their first semester grades using printed modules and second-semester grades using digitized handouts. This means that the utilization of TeachMe App has a significant effect on the students' performance and attitude towards English.

Keywords: digitization; e-learning; pandemic; performance; attitude

1. Main text

Introduction

Existing and emerging e-learning technologies have intense and immediate transformations in educational systems (Anderson, 2011). Although digital transformation in education began years ago, the pandemic has accelerated it, leading to fundamental changes. This technological transformation of education involves profound changes in teaching methodologies, essential competencies, and assessment methods (Garcia-

Morales, 2021). The sudden change has required the education sector to evolve toward online teaching in record time, implementing and adapting the technological resources available and involving teachers and researchers who lack innate technological capacities for online teaching while still being able to provide quality education in a scenario of digital transformation, disruptive technological innovation, and accelerated change in the educational framework.

According to Usec. Analyn Sevilla of the Department of education, in her post on the official FB page of DepEd Philippines, states that in times of emergencies (abnormal public health situations, calamities, and disasters), education has to adopt a learning continuity plan (LCP) that will allow the use of various alternative delivery modes including staggered and structured class scheduling, little face to face interaction with a mix of modular learning; and use of online platform or homeschooling. In these times, distance learning is the new normal. Covid-19's disruptive impact led to a rapid transformation of educational activity. The immediate suspension of face-to-face teaching forced both students and professors to adapt to a wholesale shift in the teaching-learning process (Carolan et al., 2020).

Modular distance learning is the modality used in Magdalena Integrated National High School. However, as the weeks passed by, limited resources, cost of printed materials, time-consuming printing of materials, limited access to the internet, teacher's heavy workloads, and fear of deadly virus infection during travel to school and at home were observed to be a big problem as mentioned by teachers and parents during online kumustahan and orientation of the School Learning Continuity Plan.

The statement above motivated the researcher to utilize an alternative e-learning tool called “TeachMeApp” that can be used online and offline. It is a platform where students can download and read modules, view recorded videos, view assignments, perform, submit and view results of quizzes and exams, etc. This would also help solve the problems faced by the school during and even after the pandemic, as the application can still be used as supporting instructional material. The study will determine the effectiveness of digitized handouts for flexible learning in modular distance modality using the TeachMe Application on the students' performance and attitude.

Theoretical Framework

In light of ICT integration to enhance a quality teaching and learning experience in schools, two theories of Diffusion of Innovations by Rogers (2003) and the Technology Acceptance Model (TAM) by Davis (1993) have been identified and adapted to this research. Rogers's theory stated that innovation is communicated through specific channels and over time among the members of a social system. The process will start with "knowledge" of the first channel representing the ICT users' decision-making unit characteristics to integrate the technology. Moreover, it ends with "confirmation" by the users to accept the technology and integrate it accordingly.

The TAM theory comprises various parts representing the process of ICT acceptance by the users, including; behavioral intention, perceived usefulness, and perceived ease of use. While perceived usefulness refers to the degree to which a person believes in the benefit of the use of a particular technology by improving the job performance, perceived ease of use refers to the importance of technology in being user-friendly for the users. Generally, TAM theory was developed to measure the effectiveness or success of technology in helping understand the value and efficacy of a particular system. It is also considered one of the most influential theories in contemporary information systems research.

As online learning is the new normal for the education sector, students use it instead of face-to-face classroom discussion. Although online learning has many advantages, such as its ability to provide just-in-time learning; increased access, removal of time constraints, place, and situational barriers, cost-effectiveness, greater accountability, increased interactions, provision of future employment skills for students, and adequate support for lifelong learning it also developed uncertainty, concern, and skepticism to others. In addition, some disadvantages were recorded such as commercialization of teaching, lack of face time between teachers

and students, techno-centric models prioritized over face-to-face culture, devaluation of oral discourse/discussion practices, centralization of decision making and service provision, concerns that complex and deep learning cannot be satisfactorily achieved without real-time classroom experience and others (Anderson, 2011).

Another theory anchored in this study is the social cognitive theory propounded by Albert Bandura as early as the 1980s. Social cognitive theory strongly emphasizes one's cognition. It suggests that the mind is an active force that constructs one's reality selectively, encodes information, performs behavior based on values and expectations, and imposes structure on its actions. It is through an understanding of the processes involved in one's construction of reality that enables human behavior to be understood, predicted, and changed. Given the theory, the student's academic achievement is a product of the interaction of his personality and, consequently, the study behavior he develops based on his expectations of the outcome of his actions. This can support the two indicators used in the study: motivation and study habits.

Though there are debates about whether using a particular delivery technology improves learning (Beynon, 2001), in the emergence of the pandemic, the Department of Education is prepared for the call for the continuation of education. It has been long recognized that specialized delivery technologies can provide efficient and timely access to learning materials needed for education.

Statement of the Problem

The study's main purpose was to examine the effectiveness of Digitized Handouts in determining the English performance of 150 Senior High School students of Magdalena Integrated National High School who utilized the TeachMe App.

Specifically, it sought answers to the following questions:

1. What is the students' perception of the TeachMe App in terms of its:
    - Adaptability
    - Accessibility
    - Compatibility
    - Cost-Efficiency
    - Ease of Mobility
    - Usability?
2. What is the level of performance of Senior High School students in English as reflected in their grades?
3. What is the Senior High School students' level of:
    - Motivation
    - Study Habits?
4. Is there a significant difference between the mean scores of students' first semester grades and second-semester grades after using digitized handouts through TeachMe App?

Research Methodology

The study made use of the experimental research design to determine the effectiveness of the TeachMe App in the English performance of the students and if there is a significant difference between the students' first semester grades using printed modules and second semester grades after using digitized handouts.

The respondents were the 150 Senior High School students of Magdalena Integrated National High School who used the TeachMe App. Purposive sampling will be used in this study on the selected students of Magdalena INHS. Necessary letter and permits to conduct the study were first secured. A letter of approval addressed to the office of Schools Division Superintendent (SDS) and a letter of permission to conduct the study to the MINHS Principal.

Before the researcher utilized the digitized module, the respondents used printed modules during the first quarter, then gathered the respondents' first quarterly grade in English. The researcher used the digitized module in the second quarter and gathered the students' grades again. The results of the tests were tallied to get the mean. The respondents' grades from the first quarter and second quarter were compared to find the effectiveness of digitized hand-out using the TeachMe Mobile Application.

The data collected were tallied, tabulated, analyzed, and interpreted. Mean and Standard Deviation were used to determine the students' perception/evaluation of the TeachMe app in terms of adaptability, accessibility, compatibility, cost-efficiency, ease of mobility, and usability, the level of performance of secondary students in English in terms of grades, the students level of attitude in terms of motivation and study habits while T-test was used to determine the significant difference in the students' performance from their first semester grades to second-semester grades after using digitized handouts through TeachMe App.

Results and Discussion

Students' Perception/Evaluation on the Features of the TeachMe App

Table 1. Students' perception of Teach Me App in terms of Adaptability

In terms of adaptability, the Teach Me App…	**MEAN**	**SD**	**V.I.**
1. has a user-friendly interface design	3.97	0.66	Highly Adaptable
2. is suited to my needs, interest, and abilities	3.94	0.69	Highly Adaptable
3. allows me to adjust to the new learning system	3.96	0.77	Highly Adaptable
4. encourages me to develop new skills which can be helpful for my future career	3.93	0.72	Highly Adaptable
5. meets my needs and expectations	3.90	0.61	Highly Adaptable

Overall Mean = 3.94
Standard Deviation = 0.69
Remarks = Agree
Verbal Interpretation = Highly Adaptable

The students perceived the TeachMe App as adaptable because of its user-friendly interface design, which yielded the highest mean score (M= 3.97, SD= 0.66). It also allows them to adjust to the new learning system (M=3.96, SD=0.77). On the other hand, it doesn't meet the students' needs and expectations, which received the lowest mean score of responses with (M=3.90, SD=0.61). However, modifications to some features of the application may fulfill learners' requirements and expectations to meet their needs.

Overall, the students' perceived that the TeachMe App is adaptable, as indicated by the mean score of 3.94 and a standard deviation of 0.69, and was High among the students.

The findings are supported by Heidrich, et al. (2017); he stated that adaptability is really a critical software quality characteristic and a major non-functional requirement in software and should therefore be given adequate attention during software quality measurement and predictions, especially now that the environment in which software products operate becomes highly unpredictable due to rapid changes in hardware platform as well as changes in the operating system requirements.

Table 2. Students' perception of the Teach Me App in terms of Accessibility

In terms of accessibility, the Teach Me App…	**MEAN**	**SD**	**V.I.**
1. has a functionality that is easy to understand	3.82	0.73	Highly Accessible
2. is easy to navigate within the app	3.87	0.75	Agree
3. is adjustable to the limit of my internet access	3.83	0.74	Highly Accessible
4. can be used by all students with less supervision	3.78	0.73	Highly Accessible

5.	is adjustable to my financial capability	3.70	0.78	Highly Accessible

Overall Mean = 3.80
Standard Deviation = 0.75
Remarks = Agree
Verbal Interpretation = Highly Accessible

The students' perceived that TeachMe App is accessible as it is easy to navigate within the app, with the highest mean score (M= 3.87, SD= 0.75). However, its adjustability to the financial capability of students got the lowest mean score (M= 3.70, SD= 0.78). Although the TeachMe Application didn't require students to buy data load every day, it still deducted to their living expenses, which may be why it got the lowest mean score.

Generally, the students' perceived the TeachMe App as accessible, as indicated by the mean score of 3.80 and a standard deviation of 0.75 and was High among the students.

According to David and Lazaros (2015), current research has proven the ubiquitous nature of mobile technology and how it supports the learner in many ways. The functionality of these technologies ranges from simple SMS to complex and advanced use of pedagogy. Their pedagogical functionality includes content delivery, task collaboration and virtual environment accessibility.

Table 3. Students' perception of Teach Me App in terms of Compatibility

In terms of *compatibility, the Teach Me App…*		**MEAN**	**SD**	**V.I.**
1.	runs in my phone without bugs or errors	3.67	0.67	Highly Compatible
2.	rarely crashes or causes problems on my phone	3.60	0.84	Highly Compatible
3.	functions correctly in my android/IOS phone	3.86	0.65	Highly Compatible
4.	is aligned with my current needs, values, and prior experiences in the new normal	3.81	0.60	Highly Compatible
5.	enables me to connect or communicate with my teacher directly from the app	3.86	0.62	Highly Compatible

Overall Mean = 3.76
Standard Deviation = 0.69
Remarks = Agree
Verbal Interpretation = Highly Compatible

The students' perceived that the TeachMe App is compatible because it functions properly on android and IOS phones (M= 3.60, SD= 0.84) and enables them to connect or communicate with their teacher directly (M= 3.86, SD= 0.22), which got the highest mean score. On the other hand, rarely crashes or cause problems on their phone yielded the lowest mean score (M=3.60, SD=0.84) because there are still some reported issues such as lag or delays between the action of the user and the reaction of the server supporting the task while using the app

The students' perceived that the TeachMe App is compatible as it attained a mean score of 3.76 and a standard deviation of 0.69. Furthermore, they all agreed that the TeachMe App is compatible with their cellphones, whether it is android or ios, and is aligned with their current needs, values, and prior experiences in the new normal.

The literature in the internet and education field has yet to pay significant attention to this variable. However, in other technology application studies made by Wu & Wang (2016), they found that high compatibility leads to the preferable adoption of mobile systems.

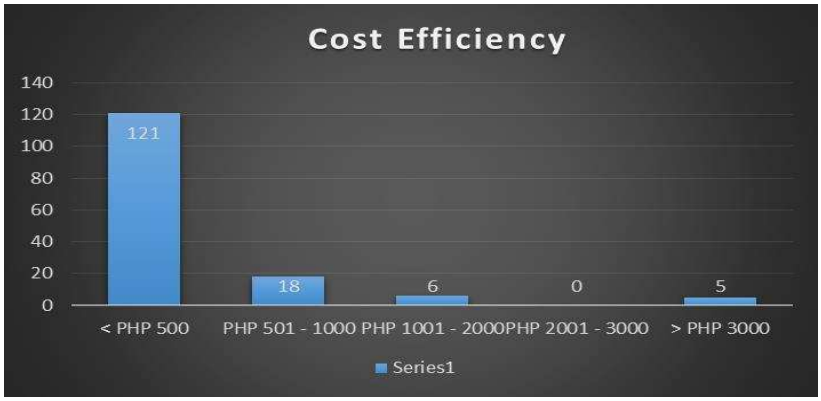

Figure 1. Students' perception of the Teach Me App in terms of Cost Efficiency

The students' perceived that the TeachMe App is cost-efficient, as seen in Figure 1. Out of 150 respondents, 121 respondents, or roughly 81% of the population, responded that they spent less than 500 pesos on the application. Another 12% claim, or about 18 respondents, state that they spend around 501 to 1000 pesos with the app. On the other hand, around 3% of the population claim that they spend more than 3000 pesos, which is about five respondents. Overall, the students' perception of the TeachMe App in terms of Cost-Efficiency is cost-effective.

The results were supported by the study of Cruz et al. (2014); they stated that the modernization of technology is everywhere, and no one can dictate the limitation of its continuous development. People's lifestyles are changing due to the development of new technology that leads to the advancement of different types of equipment and apps that is convenient and cost-efficient.

Table 4. Students' perception of Teach Me App in terms of Ease of Mobility

In terms of ease of mobility, the Teach Me App…	**MEAN**	**SD**	**V.I.**
1. enables me to answer learning tasks online or even offline	3.71	0.77	Highly Mobile
2. let me view my modules anytime and anywhere.	3.85	0.73	Highly Mobile
3. has a positive effect on both my working parents, who cannot go to school, and me	3.80	0.72	Highly Mobile

Overall Mean = 3.79
Standard Deviation = 0.74
Remarks = Agree
Verbal Interpretation = Highly Mobile

The students' perceived the ease of mobility of the TeachMe App as highly mobile because it lets them view their modules anytime and anywhere, which yielded the highest mean score (M= 3.85, SD= 0.73). It also has a positive effect on both the students and their working parents who cannot go to school (M=3.80, SD=0.72) and enables them to answer learning tasks online or offline (M= 3.71, SD= 0.77).

Generally, the students' perceived the TeachMe App as highly mobile, as indicated by the mean score of 3.79 and a standard deviation of 0.74. All the respondents agreed that the TeachMe App is a big help, especially to the students who have working parents that cannot retrieve their modules weekly, and it the App gives them ease in accessing and answering their learning tasks online, offline, anytime, and anywhere.

According to El-Hussein, Osman, & Cronje, 2017 the component of mobile learning constitutes mobility of technology, mobility of learning learners, and mobility of learning taking place in a learning environment setting.

Table 5. Students' perception of the Teach Me App in terms of Usability

In terms of usability, the Teach Me App…	MEAN	SD	VI
1. allows me to access the learning materials easily	3.85	0.72	Highly Usable
2. helps me better understand a learning topic	3.81	0.75	Highly Usable
3. aids in achieving expected learning outcomes	3.76	0.74	Highly Usable
4. is convenient as it allows me to answer learning tasks at home	3.81	0.76	Highly Usable
5. allows me to enhance my ICT skills	3.67	0.80	Highly Usable

Overall Mean = 3.78
Standard Deviation = 0.76
Remarks = Agree
Verbal Interpretation = Highly Usable

The students' perceived the TeachMe App as highly usable because it allows them to access the learning materials easily (M=3.85, SD=0.72), which got the highest mean score. Meanwhile, the statement "it allows them to enhance their ICT skills" got the lowest mean score (M=3.67, SD=0.80). ICTs can enhance the quality of education in several ways: by increasing learner motivation and engagement, facilitating the acquisition of basic skills, and enhancing teacher training. However, the TeachMe App may lack something that can make it a transformational tool that can enhance learners' ICT skills. That's why it got the lowest mean score.

They all agreed that the TeachMe App is convenient and is a great aid for them to achieve expected learning outcomes by just using their phones. Overall, the students' perceived the TeachMe App in terms of usability as highly usable, attained a mean score of 3.78 and a standard deviation of 0.76, and was High among the students.

Usability evaluation of any system is essential to ensure systems meet both design specifications and user requirement criteria. Usability can be defined as the degree to which something is able or fit to be used (Awang, 2018).

Level of Performance of SHS students in English

Table 6.1. Level of performance of Senior High School students in English in terms of Grades in the first semester

Grades	Frequency	Percentage	Descriptor
90-100	26	17.33	Outstanding
85-89	88	58.67	Very Satisfactory
80-84	30	20.00	Satisfactory
75-79	6	4.00	Fairly Satisfactory
Below 75	0	0	Did Not Meet Expectations
Total	150	100.00	
Average Mean = **86.32** SD = **3.48**			**Very Satisfactory**

Table 6.1 presents the level of performance of the senior high school students in English in terms of grades in the first semester. Out of 150 students, 88 or about 58.67% of the population attained marks between 85 and 90 and were under the Very Satisfactory descriptor. Consequently, 30 students, or around 20.00% of the total population, garnered grades between 80-84, which were Satisfactory. On the other hand, six students, or 4.00% of the population, performed Fairly Satisfactory, garnering rates between 74-79.

Overall, the senior high school students' performance in English during the first semester was represented by the average mean of 86.32 and a standard deviation of 3.48, which is remarked as Very Satisfactory.

Table 6.2. Level of performance of Senior High School students in English in terms of Grades in the second semester

Grades	Frequency	Percentage	Descriptor
90-100	50	33.33	Outstanding
85-89	73	48.67	Very Satisfactory
80-84	25	16.67	Satisfactory
75-79	2	1.33	Fairly Satisfactory
Below 75	0	0	Did Not Meet Expectations
Total	150	100.00	
Average Mean = **87.66** SD = **3.71**			**Very Satisfactory**

Table 6.2 presents the level of performance of the senior high school students in English in terms of grades in the second semester. Out of 150 students, 73 or about 48.67% of the population attained marks between 85 and 90 and were under the Very Satisfactory descriptor. Consequently, 50 students, or around 33.33% of the total population, garnered grades between 90-100, which were Outstanding. On the other hand, only 2 students or 1.33% of the population performed Fairly Satisfactory, garnering grades between 74-79.

Overall, the senior high school students' performance in English during the second semester was represented by the average mean of 87.66 and a standard deviation of 3.71, which is remarked as Very Satisfactory.

One way of determining students' achievement and learning is by looking into performance in class and at home, and other working place they are in (Crisostomo, 2013).

Students' Level of Attitude

Table 7. Senior High School students' level of attitude in terms of Motivation

STATEMENT	MEAN	SD	V.I.
1. Learning English is more fun and enjoyable using TeachMe app	3.85	0.77	Highly Motivated
2. I spent lesser time answering modules in English using the App	3.76	0.73	Highly Motivated
3. Home became more comfortable than other places because some features of the apps have listening/viewing parts.	3.81	0.70	Highly Motivated
4. A wide variety of richly diversified learning resources provided in the app makes me motivated	3.79	0.65	Highly Motivated
5. Assessments using the app make it more thrilling and exciting	3.92	0.76	Highly Motivated

Overall Mean = 3.83
Standard Deviation = 0.72
Remarks = Agree
Verbal Interpretation = Highly Motivated

Table 7 presents the senior high school students' level of attitude in terms of Motivation. Among the statements above, "assessments using the app makes it more thrilling and exciting" yielded the highest mean score (M= 3.92, SD= 0.76) and was remarked as Agree. This is followed by "Learning English is more fun and enjoyable using TeachMe app" with a mean score (M= 3.85, SD= 0.77) and was also remarked as Agree. On the other hand, the statement "Spending lesser time answering modules in English" received the lowest mean score of responses with (M= 3.76, SD= 0.73) and was remarked Agree.

The senior high school students' level of attitude in terms of Motivation attained a mean score of 3.80 and a standard deviation of 0.72, which was High among the students. All respondents agreed that they spent

lesser time answering modules in English using the App; home became more comfortable than other places because some features of the app have listening/viewing part, and a wide variety of richly diversified learning resources provided in the app makes them motivated, and assessments using the app makes it more thrilling and exciting. Overall, they are more motivated to learn English during Modular Distance Learning using the TeachMe app.

Smith (2012) stated that motivation is an important factor determining the success or failure of second language learning. Motivation can directly influence the frequency of using learning strategies. In addition, it will be the power of learning, goal setting, and persistence in learning.

Table 8. Senior High School students' level of attitude in terms of Study Habits

	STATEMENT	MEAN	SD	V.I.
1.	I proactively study without being told at home	3.74	0.84	High
2.	I prepare for classes beforehand and review what I've learned	3.82	0.74	High
3.	I try to use different methods from what I learned at school to solve problems.	3.93	0.70	High
4.	I study while using smartphone or cellphone at home	3.98	0.70	High
5.	I can efficiently finish activities using TeachMe App	3.67	0.80	High

Overall Mean = 3.83
Standard Deviation = 0.76
Remarks = Agree
Verbal Interpretation = High

Table 8 presents the senior high school students' level of attitude in terms of Study Habits. Studying using a smartphone or cellphone at home yielded the highest mean score (M=3.98, SD=0.70). Followed by trying to use different methods from what the students learned at school to solve problems (M=3.93, SD=0.70). On the other hand, finishing activities using TeachMe App received the lowest mean score of responses with (M=3.67, SD=0.80).

The senior high school students level of attitude in terms of Study Habits attained a mean score of 3.83 and a standard deviation of 0.76, and was High among the students.

The rise of ICT in education has made study habits a more actual topic for educational research. For example, Anwar (2013) found that students with poor and good study habits differed significantly in their academic performance, students with good study habits performed well in their academics and vice-versa.

Difference in the Students' Performance

Table 9. The a significant difference in the mean scores of the students' in the first semester grades and second-semester grades.

Semester	Mean	Variance	t Statistic	Critical t-value	p-value	Analysis
First	86.32	12.08	-8.263	1.976	0.000	Significant
Second	87.66	13.74				

Table 9 presents the significant difference in the mean scores of the students in the first semester grades and second-semester grades. It shows a significant difference between the two based on the computed t-statistic of -8.263 compared to the critical value of 1.976. It is supported by the computed p-value, which is 0.000, less than the significance alpha of 0.05. Hence, there is a significant difference between the two.

Bloom and Stout (2015) stated that using digitized primary source materials with K–12 students makes learning content more engaging and relevant and helps students develop a wide range of skills. As a result of the "digital revolution" of the twenty-first century, we have been living in an increasingly digitized era, with technological developments of digital media affecting every aspect of our personal and working lives.

Conclusion

In light of the summary of findings, the researcher concluded that the use of the TeachMe App amids the pandemic was effective on the students' performance and attitude toward learning English. The utilization of TeachMe Mobile App in Magdalena Integrated National High School is a big help in solving the problems faced by the school and the students during the COVID-19 pandemic, such as limited resources, cost of printed materials, time-consuming printing of materials, fear of deadly virus infection during travel to school and at home, etc. Therefore, the null hypothesis "There is no significant difference in the mean scores of the students in their first semester grades and second-semester grades after using digitized handouts through TeachMe App" is rejected.

Recommendations

From the said conclusions, the following recommendations were presented:

1. School administrators need to be aware of the many components involved in creating an effective classroom in any learning modalities utilized in emergencies like this COVID-19 pandemic.
2. The teachers may strengthen their innovative teaching strategies to enhance further the students' performance and attitudes in learning English.
3. The school board, school administrators, and teachers should prepare a regular monitoring plan on the students' performance, especially on the various learning delivery modalities, to maintain their satisfactory performance in English and other subjects.
4. Other schools may use the TeachMe Application in the new average education and even in limited face-to-face classes.
5. Future researchers may conduct studies parallel to this and use this study as a reference guide.

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